

## **Healthy Homes Greensboro: Integrated Pest Management, Air Quality, and Water Conservation to Reduce Asthma Hospitalizations**

### **I. Project Title and Project Purpose Statement**

“Healthy Homes Greensboro: Integrated Pest Management, Air Quality, and Water Conservation to Reduce Asthma Hospitalizations” will decrease hospital visits for asthma linked to poor housing conditions. In Greensboro, NC, minorities and immigrants disproportionately reside in substandard housing. Greensboro Housing Coalition (GHC) staff frequently observes moisture, pest, and structural problems in low-income minority neighborhoods that can be characterized as a mix of substandard houses and deteriorating multifamily units. Many times the children and families living in these homes are forced to live with cockroach infestations and moldy ceilings and walls, all of which are known asthma triggers. Families want to eliminate the triggers but do not have the resources, so they frequently ask GHC for help. This project, guided by the leaders in the affected communities, will empower them to address the underlying causes of asthma triggers in ways that improve air quality, eliminate pests and use of toxic sprays, and conserve water and energy, with the goal of reducing asthma hospitalizations in high-risk neighborhoods by 25%.

The project supports the residents of four heavily affected communities in Greensboro, North Carolina; existing data has defined these as zip codes 27401, 27407, 27405, and 27406. During the project period, GHC and identified partners will perform 200 housing assessments to identify and remediate poor housing conditions and resident behavior that can trigger asthma. The project is based on the two following EPA regulations: The Clean Air Act [Section 103(b)(3)] and The Federal Insecticide, Fungicide, and Rodenticide Act [Section 20(a)]. These regulations protect residents in substandard housing from the hazards of mold, pests, and pesticides, and promote effective strategies for making homes safe and healthy. These Acts provide the regulatory framework for GHC to educate and guide the strategic collaborative actions of affected communities and partners towards our goal of reducing asthma. Additionally, the project will have a positive impact on climate resiliency.

Once homes are assessed, remediation will focus on eliminating asthma triggers that habitually impede energy and water conservation. Examples of anticipated repair needs are addressing water leaks, sealing cracks and gaps, and using Integrated Pest Management to eliminate cockroach and rodent infestations.

### **II. Environmental, Public Health and Community Climate Resiliency information about the Affected Community**

*The local environmental, public health issue(s), and climate resiliency that the project seeks to address:* Substandard housing conditions exacerbate health issues, especially pulmonary, such as asthma. These conditions typically include cockroach infestations and the toxic pesticides used to exterminate them; mold growth resulting from roof and plumbing leaks

or drainage problems; and excessive cold or heat from drafty homes due to cracks and holes, which can also serve as entry points for pests.

Many of the home repairs that are necessary to alleviate asthma triggers tend to have the added bonus of making the home more energy efficient. Sealing cracks and holes will eliminate pest and rodent entry points into the home as well as reduce the amount of energy needed to heat and cool the home. Extreme temperatures are common asthma triggers. Also heat, humidity, and moisture contribute to mold growth which aggravates asthma. Repairing leaks and eliminating cracks and holes can prevent future mold growth and should also help families conserve water and energy.

GHC seeks to reduce asthma hospitalizations in these communities by 25%. These hospitalizations could be associated with unhealthy housing conditions. To reduce the number of hospitalizations, GHC would like to expand the Environmental Justice Collaborative Problem Solving project’s ability to provide families with Integrated Pest Management and Environmental Testing for air quality. Both of these measures should reduce exposure to asthma triggers. By reducing the level of exposure to asthma triggers, GHC hopes to lower the number of asthma episodes that result in the hospitalization of the asthmatic population.

*The characteristics of the affected community:*

Within high-risk neighborhoods are individuals who take leadership for not only standing up for what is best for their own families but for informing their neighbors of resources and of their rights and responsibilities. These leaders advise GHC in the most effective ways to reach other residents who may be overwhelmed by the barriers they face daily. Residing in unhealthy and substandard housing conditions often is the result of low income, low educational achievement, unawareness of available resources, lack of choice, problems with credit or income verification, and real or perceived discrimination. These issues affect minorities and immigrants disproportionately. When they become sick from the conditions in their homes and miss work or school, their options may be further limited by eviction or foreclosure. Most are unaware that their illness results from housing conditions and have limited knowledge of their legal rights to safe and habitable homes. They are often hesitant to complain for fear of retaliation by landlords or having the home condemned by city inspectors without a place to go. Refugees from war-torn countries frequently do not trust government agencies; immigrants without benefit of legal residency may fear deportation. Language and cultural barriers also contribute to communication problems between tenants and landlords, resulting in delayed maintenance and deteriorating conditions. Often, housing units that are below minimum safety standards are rented to tenants with few other options, including those from other countries, with disabilities, or with extremely limited income. Low income homeowners, especially owners of mobile homes, may delay maintenance and usually do not have savings for home repairs and improvements.

*How the affected community may be disproportionately impacted by the environmental and/or public health harm(s) and risk(s): demographics, geographic location, and community history.*

In Greensboro, the neighborhoods with the most asthma hospitalizations--emergency trips to the hospital when residents cannot breathe—are home to large numbers of African Americans, growing numbers of Hispanics, and refugees from Asia and Africa. The neighborhoods have a long history of racial segregation and disinvestment. More recently, immigrants and refugees have settled in deteriorating rental apartments or houses or in dilapidated mobile homes.

### III. Organization’s Historical Connection to the Affected Community

Greensboro Housing Coalition was created in 1989 to improve housing opportunities for Greensboro residents who could not afford decent housing. For 25 years we have been the main resource in the community for those with housing crises. Our healthy homes work began in response to the health and safety risks of the homeowners and tenants who called GHC’s Housing Hotline, concerned that their homes were actually making them sick. Many of these households reside in the zip codes, communities, and neighborhoods identified in this environmental justice campaign.

To address these health risks most effectively, GHC developed expertise in building sciences: lead, mold, ventilation, carbon monoxide, pesticides. Our core capacity in building rapport with residents and in problem-solving, partnership-building, and policy analysis equipped GHC to empower residents and community partners to resolve complex housing problems, such as the prevalence of asthma in substandard housing. This experience, plus our research study, Integrated Pest Management in Multifamily Housing and Asthma Demonstration Project, prepared us to empower residents and other organizations to understand the impact of housing conditions on asthma and to identify ways to remediate these.

For 14 years, GHC has provided leadership to address asthma and other environmental public health issues through housing interventions to affected households, creating partnerships, researching best practices, arranging training in healthy homes for community partners, and discussing effective public policies. Since we are a nonprofit agency, we do not have official enforcement power and can only recommend actions, but we do try to assist owners and tenants with “at risk” housing by addressing issues that are potentially harmful to the health and welfare of the residents. Repairs such as sealing cracks and holes often improve the energy efficiency of the home which positively affects the climate. We work with other community partners such as Community Housing Solutions to provide these repairs at low or no cost to the low income residents who cannot afford such assistance.

Community partners are of great importance to the work that GHC does. When GHC first began discussing substandard housing in 2000, stakeholders were unwilling to cooperate with each other. We have practiced many different ways to resolve the disputes over the years, including facilitated workshops, analysis and presentation of data, re-grouping, re-framing the issues, and leveraging new resources to support the participation of hesitant groups. Through this patient engagement with an ever-broadening variety of organizations, GHC has built strong and diverse collaborations among government agencies, nonprofit health and housing organizations,

universities, rental investors, pest management professionals, environmental experts, and other industry groups.

GHC has had the opportunity to train various community members and students. GHC brought trainers from the National Healthy Homes Training Center to Greensboro to provide training to energy contractors, housing code inspectors, housing rehabilitation managers, social workers, and other home health workers about the impact of housing conditions on health. Additionally, GHC has been deeply involved in code enforcement. When affected residents fear retaliation by landlords and do not see the city holding landlords accountable, they are unwilling to call code enforcement and so they continue to live in deteriorating housing with severe asthma triggers. To change this dynamic, GHC has a contract with the City of Greensboro, as a community-based partner, to assist with city code compliance. For over 14 years now, GHC has studied municipal code enforcement policies and has tracked the code violation cases to support the city in consistent and assertive use of requirements and penalties to achieve compliance.

GHC is committed to long-term presence in the community, continuing our support for efforts to make their homes and neighborhoods safe and stable. The community’s capacity to meet housing needs will continue to increase through the leadership and training offered by GHC.

#### IV. Project Description

We will educate community partners and residents of high-risk neighborhoods about the impact of housing conditions on health. Asthma has several triggers including allergens associated with cockroaches, rodents, and mold. These triggers can aggravate an asthmatic’s airway and cause an asthma attack. These asthma attacks can be extremely burdensome to asthmatics’ families emotionally, physically, and socially. Unfortunately, in low-income communities in Greensboro asthma attacks disproportionately send asthmatics to the emergency room for treatment. Therefore, the expansion of the Environmental Justice Collaborative Problem Solving project will seek to reduce asthma hospitalizations that result from pest infestations, toxic pesticides used to eradicate pests, and mold. By focusing on the root causes of pest infestations and mold, GHC will deliver a program that will address water and energy waste.

Pests, such as cockroaches and rodents, have three needs to thrive in a home. Their first requirement is a point of entry into the home. Common points of entry are cracks and holes. These cracks and holes only need to be as large as 1/8th of an inch for roaches and a 1/4th of an inch for rodents. Once in the home, the pests need food and water. Dirty dishes, open garbage, open containers of food or food scraps, crumbs on the floor and other hard surfaces, and pet food are all sources of food for pests. Water leaks, dripping faucets, and condensation accumulation from poor ventilation provide access to water for pests.

Similarly mold growth is assisted by conditions in the home. Mold requires moisture that accumulates from leaks, dripping faucets, and condensation accumulation. Additionally mold grows best in high humidity created by poor ventilation. Cracks and holes in the home serve a different purpose for mold; they allow for airflow that aids in mold growth and dispersal.

Because mold and pests have many of the same needs to thrive, the process for addressing mold and pests is also similar. Integrated Pest Management has four steps: 1) holes and cracks are sealed, 2) water leaks and high humidity are resolved, 3) food sources must be removed or contained, and 4) pesticides are used in a targeted manner at the correct toxicity level for the infestation and home. For mold, Environmental Testing is used to determine species, particle count in the air in the home, and its visible and inconspicuous locations. This testing will help to identify the route of mold removal or cleanup necessary for the home. The process will also require that moisture issues are resolved as this is the most important contributor to mold growth.

Therefore Greensboro Housing Coalition will address pest, pesticide usage, and mold growth with three key activities. First, GHC will educate community partners in several key areas: the intersection of housing conditions and health outcomes, the process of Integrated Pest Management, and mold resolution. Additionally, education will be provided about how Integrated Pest Management and mold resolution reduce water and energy usage. The second key activity is to counsel households with asthmatics about how mold and pests can contribute to asthma attacks, how to eradicate pests and mold, and how these options affect the environment by conserving water and energy. Because the residents will now be equipped with a deeper knowledge base and support system, the residents will be empowered to make their own decisions concerning controlling pests and mold in a way that will not aggravate asthma and will help the environment. Therefore, GHC’s final program activity will be to assist families to get Integrated Pest Management, Environmental Testing, and mold treatment by connecting them to resources that provide these services and paying for these, as needed.

As can be seen, each of these activities focuses on educating the communities’ partners and members about the association between the root causes of pest infestations and mold growth and energy and water waste. This education will be used to empower and enable asthmatics and their support systems to make decisions that will positively affect their asthma.

The program’s key activities will take place over last 12 months of the Environmental Justice Collaborative Problem Solving project. The activities will be integrated into the housing interventions and community partner training meetings proposed in the EJCPs program description.

Additionally, this work will also address the Clean Air Act and the Federal Insecticide, Fungicide, and Rodenticide Act. Removing mold will increase the indoor air quality by reducing the number of mold particles (air pollutants) in the home. Sealing cracks and holes in the home will also increase the quality of the indoor air by reducing points of entry for outdoor air pollutants and allergens to enter the home. Several outdoor air pollutants and allergens are also asthma triggers, like tobacco smoke, car emissions, and pollen. Also because GHC wants to educate community members and partners about the process of Integrated Pest Management, GHC will increase public knowledge about the correct use of pesticides.

### *Collaborative Relationships*

The expansion of the EJCPS project will rely on collaborative partnerships to garner participants and to aid in the completion of the programmatic activities. Some of the partners will also be using the One Touch system to help identify health hazards or risks in the homes that they visit as part of their usual work.

Community residents who have received help from the program will likely know others who have housing issues and asthma. Therefore, GHC expects that word of mouth will also play a role in referrals.

Local healthcare providers and clinics have agreed to refer asthmatic patients who may have housing issues that affect their asthma to our program as well. Health care providers will be provided information about the program and will be able to recommend that patients they suspect may be living in unhealthy homes contact GHC and request a Healthy Home assessment visit.

Guilford County School staff will be fundamentally involved in referrals. Staff and faculty of the school system have a vested interest in ensuring that students are performing at their highest level. When students have housing conditions that affect their health, they are often unable to get a full and restful night of sleep, cannot focus in the classroom, are unable to fully participate in physical activity, and are often absent from school due to illness. Thus, their school performance may suffer. Faculty and staff know which students exhibit these learning impediments and will be able to use the One Touch system as an aid to identify and help resolve some of the home issues. For example, Social Workers make home visits to assess the safety of the home, investigate potential issues of neglect or abuse, and evaluate the mental health of household members. The Social Workers will have access to the One Touch system and use it to document housing conditions. The system will then be used to send a referral to an agency that can provide assistance to remedy the poor housing conditions.

Guilford County Department of Social Services (DSS) will be a key collaborative partner as they administer public benefits and provide supportive services to many residents. Its staff often encounters housing conditions that are hazardous to its residents. They will be able to identify and refer participants to GHC’s program. In turn DSS’s mission of protecting children and adults from themselves and others can be served by the housing assessments. When necessary, GHC’s expert housing assessments can be used in court to document the “injurious environment” in cases of abuse or neglect of children or adults who have been found incompetent.

Community Housing Solutions (CHS) is a nonprofit agency that repairs homes and restores hope through volunteer labor under expert supervision. One of the best comprehensive home rehabilitation programs in North Carolina, CHS uses the most advanced energy efficiency and healthy homes methods. Therefore, the agency will be able to assist GHC in completing remediations with environmental consciousness.

The City of Greensboro has jurisdiction over minimum safety standards, with enforcement authority to compel compliance in order to preserve housing quality, prevent crime, and stabilize property values. One Touch partners can provide “reasonable cause” for

inspections by identifying houses, apartments, and mobile homes with potential code violations—and can help residents and owners bring their properties up to code. The City of Greensboro has committed to enforce local ordinances when owners or occupants fail to comply with Orders to Repair. The city also provides housing rehabilitation services, relying on GHC and other partners to do outreach to households where housing conditions impact health.

Partners will also be able to provide aid in data collection, data analysis, and evaluation as well. Two local colleges, the University of North Carolina at Greensboro (UNCG) and North Carolina Agricultural and Technical University teach future professionals and conduct research; through collaboration with community initiatives, the universities can provide real-life experience for students and apply their research to immediate needs. Several interns from these universities will be working with GHC to complete the program activities, map data, analyze data, and evaluate the program’s efforts in reaching its objectives. Within UNCG, the Center for New North Carolinians’ Immigrant Health Access project facilitates health, housing, and social services for refugees and immigrants through providing language and cultural interpretation for many languages.

Triad Adult & Pediatric Medicine is a local nonprofit organization operating clinics for patients with limited resources. Triad HealthCare Network, the Accountability Care Organization at Cone Health System, helps the hospitals and medical practices to use best practices to improve health outcomes with fewer hospitalizations. Greensboro Housing Coalition and Triad HealthCare Network (THN) are working together to compare the hospital costs of pediatric asthma patients before and after housing interventions.

Two key partners, the City of Greensboro and the Center for New North Carolinians, have signed Memoranda of Agreement with GHC for this project.

#### V. Organizational Capacity and Programmatic Capability

Greensboro Housing Coalition uses an accrual accounting system with financial statements prepared annually in accordance with GAAP and an annual audit by Apple Koceja & Associates CPA to assure fiscal accountability.

GHC is a recent recipient of EPA cooperative agreement 00D22014 through the Environmental Justice Collaborative Problem-Solving program; our program officer is Deborah Carter in EPA Region 4 office.

Additionally, we have managed federal grants and contracts since 2003. HUD Housing Counseling Program (CFDA 14.169) is a Comprehensive Grant, paid on a reimbursement basis after successful submission of quarterly reports documenting the completion of benchmarks and the expenditures for approved budget items. In addition, GHC has managed the following subcontracts for federal funding to local and state governments and national organizations:

- HUD Lead Hazard Control grants through the City of Greensboro
- HUD Healthy Homes Technical Studies grants through Alliance for Healthy Homes, National Center for Healthy Housing, and Wayne State University

- HUD Homeless Prevention Rapid Rehousing Program funding through the City of Greensboro and North Carolina Office of Economic Recovery
- US Treasury grants for foreclosure prevention through North Carolina Housing Finance Agency

In each of these contracts, GHC has provided full fiscal and program reporting and met or exceeded performance goals.

GHC has the organizational capacity to successfully implement and complete this project due to knowledgeable, experienced, and dedicated staff. Brett Byerly, Executive Director, is certified as a Healthy Homes Specialist and an HHRS assessor; for ten years he was a home inspector. Healthy Homes Specialist Willena Cannon has over 50 years experience as a community organizer in Greensboro. Jana Raczkowski, an HHRS assessor, is a native Spanish-speaker who educates and counsels Hispanic and English-speaking residents to address their public health issues. The resumes of Brett Byerly, Jana Raczkowski, and Willena Cannon are attached. The qualifications of Byerly and Raczkowski as co-project managers will be described in the next section.

GHC will manage this cooperative agreement by planning all activities to meet the benchmarks in the attached logic model and by documenting both the processes and outputs. In collaboration with Dr. Kenneth Gruber, Senior Research Scientist at The University of North Carolina at Greensboro, and Dr. Mark Smith, an epidemiologist at Guilford County Department of Public Health, GHC will establish baseline data and progress reports to quantify the outcomes.

To achieve the goals of the proposed project, GHC will work in accordance with community members and partners to pursue the goals, activities, and outputs in our logic model. The diagram below outlines the strategy to achieve the two primary outcomes of the project:

Outcome	Steps
25% reduction in asthma hospitalizations	<ol style="list-style-type: none"> <li>1. Medical providers refer patients, One Touch partners identify homes with asthma risks</li> <li>2. Housing interventions to address asthma risks</li> <li>3. Neighborhood organizing to empower residents to assert right to repairs</li> <li>4. One Touch partners to support residents with repairs and enforcement</li> <li>5. Data collection and analysis to measure outcomes</li> </ol>
Reduction in energy and water usage	<ol style="list-style-type: none"> <li>1. Perform housing assessment and environmental testing to identify areas of remediation need</li> <li>2. Educate family in root causes of pests and mold</li> <li>3. Educate family in connection between causes of pests and mold and waste of energy and water</li> <li>4. Make remediation recommendations and support family in decision</li> <li>5. Assist family in contacting and paying for remediation services</li> </ol>

#### VI. Qualifications of the Project Manager (PM)

*Raczkowski’s relevant experience:* Jana Raczkowski has experience in organizing, managing, and leading project tasks as a former Department of Defense consultant, which included stringent reporting on metrics and measures as required by federal, state, and local



policies. As project manager, Raczkowski has the capacity to maintain multiple ongoing project tasks and the communication and coordination skills to ensure that participants and partners are informed and receive the assistance necessary to accomplish goals.

*Ties to the affected community and stakeholders:* Raczkowski grew up in the city of Greensboro, NC, received a BA in Communication Studies from The University of North Carolina at Wilmington in 2006, and has worked as a Healthy Homes team member with GHC since July 2012. Since then, Raczkowski has graduated with a Masters in Public Affairs, Concentration in Nonprofit Management, from The University of North Carolina at Greensboro. Through her upbringing, work, and education, Raczkowski has established many strong relationships and networks amongst local professionals in the city government, private organizations, and with nonprofit entities. As a result of her working in the field on a daily basis, which includes going to client’s homes and interacting with residents throughout the city of Greensboro, Raczkowski has developed a positive and well known reputation with her clients, other working professionals, and partners such as Guilford County Department of Social Services, City of Greensboro staff, and nurses from Triad Adult Pediatric Medicine to assist people suffering from asthma related to their substandard housing conditions. Her native Hispanic roots have allowed Raczkowski to become a trusted and highly regarded resource for housing in the local Hispanic community, which has given her access to many families and groups that are suffering from health and safety hazards in their homes. She frequently appears in local media, and goes into communities, from churches to residential homes to educational institutions, to educate and inform people from all demographics and backgrounds about their housing rights and how to achieve goals in attaining safer and more affordable housing.

*Byerly’s relevant experience:* Brett Byerly has 15 years experience in inspecting and assessing homes, apartments and buildings. He worked for 10 years as a North Carolina Licensed Home Inspector and since then has performed inspections for rapid re-housing program recipients in accordance with federal housing quality standards and other federal, state, and local programs. He has gained both local and national respect in the field of housing assessments and in particular, Healthy Homes assessments. He is currently the team leader for the Housing Coalition’s Healthy Homes programs and is responsible for the production aspects of the Advancing Safe & Healthy Homes Initiative (ASHHI) grant as well as assessments and data entry for the Healthy Homes Rating System project with the Wayne State University Center for Urban Studies and HUD.

*Ties to the affected community and stakeholders:* Byerly quickly establishes rapport with residents of the homes he visits and has established strong relationships with government, non-profit and private entities that have resulted in a reduction in substandard housing in Greensboro.

*Cannon’s relevant experience:* Willena Cannon has done housing assessments since 2001, raising awareness of lead paint hazards and mold. She completed training as a Healthy Homes Specialist through the National Healthy Homes Training Center.

*Ties to the affected community and stakeholders:* Cannon has been a community organizer in Greensboro for more than 50 years and has the confidence of community residents who are eager for her to come to their homes.

VII. Past Performance in Reporting on Outputs and Outcomes

GHC reports on outputs for all of our contracts and grants: number of persons served, number of meetings, and/or number of homes assessed. We will report outputs for the EJ CPS cooperative agreement this quarter.

To report performance on outcomes, GHC examines the impact of our work to describe the qualitative and quantitative difference that our activities contributed to the community. For example, as a HUD-approved Comprehensive Housing Counseling Agency, we report quarterly on the number of households who have found rental housing, resolved problems with landlords, or prevented foreclosure through our services.

VIII. Quality Assurance Project Plan (QAPP) Information

The expansion of the Environmental Justice Collaborative Problem Solving project will not involve the collection of new data.